**United States Department of the Interior**
National Park Service

# National Register of Historic Places Registration Form

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in National Register Bulletin, *How to Complete the National Register of Historic Places Registration Form.* If any item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions.



## 1. Name of Property

Historic name: ____Calaveritas Creek Bridge_____
Other names/site number: __Bridge 30C-24_____
Name of related multiple property listing**:**
_____N/A_____
(Enter "N/A" if property is not part of a multiple property listing

## 2. Location

Street & number: __Calaveritas Road at Calaveritas Creek_____
City or town: _Calaveritas_____ State: _____CA___ County: ___009_
Not For Publication: ☐ Vicinity: ☐

## 3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act, as amended,

I hereby certify that this ___ nomination ___ request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60.

In my opinion, the property ___ meets ___ does not meet the National Register Criteria. I recommend that this property be considered significant at the following level(s) of significance:

**___national ___statewide ___local**
Applicable National Register Criteria:

**___A ___B ___C ___D**

**Signature of certifying official/Title:** **Date**

**State or Federal agency/bureau or Tribal Government**

In my opinion, the property ___ meets ___ does not meet the National Register criteria.

**Signature of commenting official:** **Date**

**Title :** **State or Federal agency/bureau or Tribal Government**

## 4. National Park Service Certification

I hereby certify that this property is:

___ entered in the National Register

___ determined eligible for the National Register

___ determined not eligible for the National Register

___ removed from the National Register

___ other (explain:) _____

Signature of the Keeper Date of Action

## 5. Classification

### Ownership of Property

(Check as many boxes as apply.)

| | |
|---|---|
| Private: | ☐ |
| Public – Local | x |
| Public – State | ☐ |
| Public – Federal | ☐ |

### Category of Property

(Check only **one** box.)

| | |
|---|---|
| Building(s) | ☐ |
| District | ☐ |
| Site | ☐ |
| Structure | x |
| Object | ☐ |

**Number of Resources within Property**
(Do not include previously listed resources in the count)

| Contributing | Noncontributing | |
|---|---|---|
| 1 | | buildings |
| | | sites |
| | | structures |
| | | objects |
| | | Total |

Number of contributing resources previously listed in the National Register 1

**6. Function or Use**
**Historic Functions**
(Enter categories from instructions.)
Transportation – road related (vehicular)

**Current Functions**
(Enter categories from instructions.)
Transportation – road related (vehicular)

## 7. Description

### Architectural Classification
(Enter categories from instructions.)
Polygonal top chord Warren pony truss

### Materials: (enter categories from instructions.)
Principal exterior materials of the property: _Metal

### Narrative Description
(Describe the historic and current physical appearance and condition of the property. Describe contributing and noncontributing resources if applicable. Begin with **a summary paragraph** that briefly describes the general characteristics of the property, such as its location, type, style, method of construction, setting, size, and significant features. Indicate whether the property has historic integrity.)

### Summary Paragraph

The Calaveritas Creek Bridge (Bridge 30C-24) is a polygonal top chord Warren pony truss. It is 100' long and is supported on concrete wing wall abutments. The bridge was installed in 1928 on plans by the county surveyor, W. S. Coulter.[1] The contract for building the bridge was awarded to R. L. Stevens of Portland, Oregon. County records do not indicate the company that manufactured the truss. The steel, however, has rolling marks for PCS Co., likely indicating fabrication by the Pacific Coast Steel Company of South San Francisco. The bridge retains a very high degree of integrity to its appearance upon construction. The only notable change was the replacement of the original timber guard rails inside the truss with metal beam rails, and replacement of the original wooden deck with a newer wooden deck, both in 1968.

[1] A one-sheet set of plans are filed with the Calaveras County Public Works, "Calaveritas Bridge over Calaveritas Creek, Calaveras County, California," signed by W. S. Coulter, County Surveyor, June 9, 1928.

## Narrative Description

The setting for the bridge is a remote, rural section of Calaveras County, south and east of San Andreas at the southern entrance to the small unincorporated community of Calaveritas. Calaveritas Road, on which this bridge is located, is a two-lane road south of the bridge but a one-lane road north of the bridge. It is shown in **Photograph 1.**

The polygonal top chord for this Warren truss has seven angles, each of which is supported on an equilateral triangle. The multiple angles to the top chord and the equilateral triangles define the bridge type: a polygonal top chord Warren pony truss. Each triangle is further divided by a vertical element; a Warren with vertical elements is sometimes called a Warren with verticals.[2] The essential design is shown in a one page plan from which the bridge was fabricated and built.

The diagonal members and most verticals are metal beams comprising two angle irons connected with horizontal riveted pieces, as shown in **Photograph 2** below. Alternating vertical members, however, are angle irons which are bolted to the top and bottom chords. This can be seen more clearly in **Photograph 3**. Metal transverse floor beams connect to each vertical beam. The floor beams connect to gusset plates on the outside of each truss. The beams are also connected to an unusual angled and riveted joint at the deck level, as shown in **Photograph 4**. This angled connection occurs at each of the vertical beams on either side of the bridge. The deck, according to the Caltrans inspection reports, is timber with a two-inch asphalt concrete surface. County records indicate that little work has been performed on this bridge over its lifespan. In 1968, the wooden deck (1"x4" laminated deck) was replaced by 2"x4" boards and a 2" asphaltic overlay was put in place. At that time, a timber guard railing was replaced by the current metal beam railing. The bridge was cleaned and painted in 1984.[3]

[2] The variations on Warren pony trusses are discussed in greater detail under "Significance."

[3] Data taken from a file on this bridge, which includes all available Caltrans Bridge Reports as well as the contract for cleaning and painting the bridge.

## 8. Statement of Significance

**Applicable National Register Criteria**
(Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing.)

- [ ] A. Property is associated with events that have made a significant contribution to the broad patterns of our history.
- [ ] B. Property is associated with the lives of persons significant in our past.
- [x] C. Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.
- [ ] D. Property has yielded, or is likely to yield, information important in prehistory or history.

**Criteria Considerations**
(Mark “x” in all the boxes that apply.)

- [ ] A. Owned by a religious institution or used for religious purposes
- [ ] B. Removed from its original location
- [ ] C. A birthplace or grave
- [ ] D. A cemetery
- [ ] E. A reconstructed building, object, or structure
- [ ] F. A commemorative property
- [ ] G. Less than 50 years old or achieving significance within the past 50 years

**Areas of Significance**
(Enter categories from instructions.)
Engineering

**Period of Significance**
1928

**Significant Dates**
1928

**Significant Person**
(Complete only if Criterion B is marked above.)

**Cultural Affiliation**

**Architect/Builder**
Coulter. W. S. Engineer; Stevens, R. L. Builder

**Statement of Significance Summary Paragraph** (Provide a summary paragraph that includes level of significance, applicable criteria, justification for the period of significance, and any applicable criteria considerations.)

The Calaveritas Creek Bridge appears to qualify for listing in the National Register of Historic Places at the local level of significance under Criterion C, as a rare example of a specific bridge type: the polygonal top chord Warren pony truss. It is one of a relatively small number of such bridges in California and is the oldest and arguably the most significant example of the type. Although this bridge was found not to qualify for the National Register in two separate versions of the Caltrans Historic Bridge Inventory, there is good reason to believe that both inventories undervalued the importance of the polygonal top chord Warren as an important and distinctive bridge type. To analyze how this bridge may have been undervalued, the present nomination will discuss how truss bridges were evaluated in the Caltrans surveys. It will then analyze recent findings from historic bridge inventories undertaken by other states, with specific reference to the value given to polygonal top chord Warren trusses. The nomination will then re-analyze the potential significance of this bridge in light of findings from other state historic bridge inventories as well as the general requirements for meeting National Register eligibility criteria.[4]

**Narrative Statement of Significance** (Provide at least **one** paragraph for each area of significance.)

### General Discussion of Caltrans Historic Bridge Evaluation Methods

The Caltrans Historic Bridge Inventory was first completed in the 1980s, then updated in the 2000s. From the outset, the inventory utilized quantitative evaluation methods to sort through tens of thousands of bridges and identify those that were or were not historically significant. California was by no means the first state to adopt these quantitative techniques. Indeed, Caltrans borrowed heavily from earlier efforts by Ohio, Pennsylvania, Indiana, Virginia, and a few other states that pioneered in evaluating thousands of historic bridges at a time.[5]

Quantitative methods in the various bridge surveys took into account measures of engineering significance, rarity, and integrity. The California system for evaluating metal truss bridges was typical of such efforts and borrowed heavily from earlier state efforts. One measure was date of construction. Points were assigned to the date of construction, with older bridges scoring higher than newer structures, recognizing the obvious point that very old bridges are quite rare. Another variable assigned points based upon the length of the main span, with longer spans scoring higher, recognizing the greater engineering

[4] The current author was chiefly responsible for the 1986 Caltrans Historic Bridge Inventory and reported its results in: Stephen D. Mikesell, *Historic Highway Bridges of California*, Caltrans 1990. The author had reason to analyze recent historic bridge inventory methods while compiling the 2014 National Cooperative Highway Research Program report NCHRP 25-25, Task 88, "Transferring Ownership of Historic Bridges: Approaches and Challenges," August 2014.

[5] The general history of using these methods is outlined in Stephen D. Mikesell, "Historic Preservation that Counts: Quantitative Methods for Evaluating Historic Resources," *The Public Historian,* Fall, 1986, pp. 61-74. This article deals specifically with evaluating historic truss bridges in California. The 1980s survey was completed by Caltrans employees; the 2000s survey was completed by contractors but used a slightly modified version of the 1980s quantitative methods.

challenge in making long spans. The three variables assigned the greatest value were date of construction, surviving number of types, and integrity, each given 20 points. Date of construction was designed to recognize very old bridges. Integrity was designed to reward bridges that had not been modified. Surviving number of type was designed specifically to reward bridges that represented rare types of bridge structures.The evaluation system from 1986 is illustrated in **Figure 1** below. This figure is from an article in *The Public Historian*, comparing California and Ohio systems.

**Discussion of Treatment of Warren Trusses in the Caltrans Historic Bridge Inventory**

As discussed earlier, "surviving number of type" is one of the three highest rated variables in the Caltrans system, reflecting a very high value placed upon rarity of a type. In identifying bridge types, Caltrans and all other state inventory efforts relied heavily upon a guide prepared by the Historic American Engineering Record (HAER), entitled "Trusses: A Study by the Historic American Engineering Record." A widely-used visual guide in that report is reproduced as **Figure 2** below. [6] This figure and the accompanying report were prepared by Donald Jackson and T. Alan Comp of the HAER in 1977.

By far the most common historic truss types in California, as elsewhere, are the Pratt and Warren trusses. The Pratt truss was built around vertical members in compression and diagonals in tension, with the vertical members being heavy beams and the diagonal tension members being much smaller. The Pratt configuration is shown on the top line of Figure 2. The Warren truss was built around a series of equilateral triangles, making all members in compression as well as in tension. The basic Warren design is shown in the right-hand corner of Figure 2. The essential forms for both the Pratt and Warren trusses were developed in the 1840s; the truss types were named after their inventors, Thomas and Caleb Pratt and James Warren, respectively.

Over time, engineers made improvements to both the Pratt and Warren bridge forms, principally to make the form usable on longer spans. The 1977 Comp and Jackson study paid great attention to the flurry of variations on the Pratt form. Most of these are illustrated in **Figure 2**. The Baltimore Petit, for example, was a Pratt with a series of sub-struts. The Parker was a Pratt with a polygonal top chord. The Pennsylvania was a Parker with sub-struts. A Camelback was a Parker with exactly five slopes to the polygonal top chord.

In the Caltrans bridge inventory, these Pratt subtypes were counted separately. This greatly rewarded these bridges under "surviving number of type" because there were so few examples of each of these subtypes. Virtually all Baltimore Petit and Pennsylvania Petit bridges were found to qualify for listing in the National Register, in part because they received very high scores under the rarity factor.
Warren trusses by contrast were lumped together, without distinction as to subtype. There were several variations on the Warren truss type, some of which were recognized in the 1977 Comp and Jackson study, some of which were not. The 1977 study, for example, recognized a Warren with vertical subtype. The Caltrans inventory, however, recognized only the basic Warren form, without any subtypes. As a result, every Warren truss in the state was given a score of zero in the "surviving number of type" category, recognizing that there were hundreds of Warren bridges in the state.

It appears that the 1986 version of the Caltrans survey recognized only two Warren trusses as eligible for the National Register. One was an inverted Warren truss on Honeydew Creek in Humboldt County; that bridge has since been demolished. The other was the Storrie Bridge on Highway 70 in Plumas County. That bridge was found to be eligible for listing in the National Register as part of the Feather River Highway Historic District independent of the Caltrans Historic Bridge Inventory.
As discussed below, various states have updated their bridge inventories and have reevaluated some bridges, based upon trends observed in the inventory efforts, trends that may not have been clear to

[6] Figure 2 is a one-page summary of the finding of "Bridge Truss Types," by Jackson and Comp, published as Technical Leaflet 95 by the American Association of State and Local History, May 1977. This publication was used and cited in essentially every historic bridge inventory in the United States.

Comp and Jackson in 1977 or in the first generation of bridge surveys conducted in the 1980s. One such trend has been an increased appreciation of the polygonal top chord Warren pony truss as a distinct bridge type.

**Importance of the Polygonal Top Chord Warren Pony Truss in Other State Inventories**

As noted, the polygonal top chord Warren pony truss was not treated in the 1977 HAER guide to historic bridges, commonly held to be the "bible" for historic bridge identification and evaluation. That oversight likely diminished, or at least delayed, the appreciation of bridge historians for this distinctive bridge type. Over time, however, state bridge inventories outside of California have begun to appreciate this bridge as a distinctive bridge type, as distinctive, say, as the Parker or Camelback variations on the Pratt truss. Increasingly, state inventories outside California have identified the polygonal top chord Warren pony as a distinct type and have determined such bridges to be eligible specifically because they represent examples of this important but rare bridge type.

A survey of the findings of a few state inventories will document the extent to which states outside of California have come to appreciate and recognize the historic significance of these types of bridges. In its online "Spans of Time," the Oklahoma Department of Transportation (DOT) lists truss bridge by type, one of which is the polygonal top chord Warren pony truss. Four such bridges are listed in the National Register. The significance of the type is described as follows:

> Engineers altered the Warren truss as they did the Pratt, though their success, as measured by use within Oklahoma, did not reach the same proportions as with the Pratts. The most common change saw the curving of the top chord to achieve greater length and more economy without sacrificing strength; a polygonal chord Warren could be built to 140 feet as a rule. Never a standard state design, most of this type originated in the counties between 1909 and 1920 (Figure 56). The oldest documented example was built northwest of Vinita in 1909 by Illinois Steel Bridge, a 133-foot riveted span with verticals. The typical structural plan employed channel beams for the top chord, braced angle in the bottom chord, and laced angles for diagonals. Gusset plates reinforced the joints on most of these spans.[7]

In the Iowa historic bridge inventory, the DOT found the Nishnabotna River Bridge eligible for listing in the National Register because it is the only example of this bridge type in the state:

> Located southwest of Henderson in northwestern Mills County, this rigid-connected pony truss carries a paved county road (once a part of a state highway) over the Nishnabotna River. The bridge is comprised of two skewed trusses, each configured as a Warren pony with polygonal upper chords. The trusses are supported by concrete abutments and piers, and they are approached by steel stringer approach spans on both ends. The Nishnabotna River Bridge was designed by engineers for the Iowa State Highway Commission in the summer of 1929. The bridge's skewed orientation and relatively long span length prompted ISHC to produce a special design for the trusses, rather than rely on its standard plans. On August 20, 1929, the state highway commission contracted with the McCormack Construction Company of Lohrville, Iowa, to construct the bridge for $30,900. Using steel rolled by Inland, McCormack completed the bridge the following year. It has since functioned in place, without substantial alteration.
>
> Although at least one Iowa bridge company employed polygonal-chorded Warren trusses on a limited basis in the early 1910s, this inherently long-span structural type never found much favor among the counties. As a result, relatively few such trusses were built in the

[7] ODOT, "Spans of Time," http://www.okladot.state.ok.us/hqdiv/p-r-div/spansoftime/toc.htm.

> state between 1910 and 1913--the year that the state highway commission began issuing standard plans for bridges. ISHC's standard pony trusses ranged in span length between 35 and 100 feet, all featuring straight-chorded Warren configurations. The sloped upper chords of the Nishnabotna River Bridge are an anomaly, apparently an attempt by ISHC to develop a more materially conservant structural type for its long-span ponies. It is not known whether the Nishnabotna River Bridge was the first example of this truss type, or whether others were ever built, but this bridge today is distinguished as the only example of its kind by ISHC remaining in the state. It is thus technologically noteworthy as a well-preserved example of an uncommon structural type.[8]

Arkansas recently nominated Highway Bridge 57 to the National Register, specifically because it is the only polygonal top chord Warren pony truss on the Arkansas state highway system:

> The Arkansas Highway 57 Bridge was constructed in 1928. It is being nominated to the National Register of Historic Places with statewide significance under Criterion C. This bridge is the only known example of a Warren pony truss with a polygonal top chord used on a state highway in Arkansas. The bridge is also being nominated under Criterion A for its associations with the development of vehicular transportation in Ouachita County. This nomination is being submitted under the multiple-property listing "Historic Bridges of Arkansas" and under associated historic context "Arkansas Highway and Transportation Department Era: 1923-1939."[9]

In its historic bridge inventory, the State of Nebraska called out the polygonal top chord Warren pony truss as a distinct bridge type and recognized at least one bridge because it represented that type:

> The Nebraska Bureau of Roads and Bridges eschewed Warren truss configurations in favor of the Pratt truss throughout the 1910s and 1920s. In the early 1930s, however, the bureau designed a handful of bridges using Warrens with polygonal top chords for its long-span pony trusses. The Franklin Bridge over the Republican River is one of these. The state designed the structure in 1932 and hired the Koehler Construction Company of Lincoln to build it. Completed that year, the bridge was comprised of three 100-foot, polygonal Warren pony trusses and three approach spans.[10]

The State of Texas recognized the importance of this bridge type in its HAER recordation for its historic bridge recordation project, prior to the bridge being moved or scrapped:

> The Maury Maverick multiple truss bridge is significant in that it is one of only two structures remaining in Texas featuring a polygonal top-chord Warren truss with a span greater than 100' (most are between 60'-100' in length)…. Engineers of that period experimented in several ways with the historic style of the Warren truss. Curving the top chord along a polygonal profile allowed greater length and a more efficient use of materials than a standard Warren truss. The type became popular in the first two decades of the twentieth century with improvements in steel fabrication and field riveting, making it a favorite with early state and county highway engineers.[11]

Missouri determined a polygonal top chord Warren truss to be eligible for listing in the National Register, in relation to a proposal to remove the Horse Creek Bridge. The Horse Creek Bridge was built in 1947 and included a 110' main span. The analysis noted that: "In the early 1930s the department [Missouri Highway Department] designed Warrens with polygonal top chords, a variation that was more materially

[8] IDOT, "Historic Bridges of Iowa," http://www.iowadot.gov/historicbridges/detail.asp?id=156
[9] http://www.arkansaspreservation.com/historic-properties/_search_nomination_popup.aspx?id=2206
[10] http://www.fhwa.dot.gov/nediv/bridges/franklin.cfm
[11] HAER No. TX-82, Maury Maverick Bridge, Karnes County, Texas, August 2000.

conservant for longer spans. About 15 were built in the 1930s and 1940s. [The Horse Creek Bridge] is one of only eight remaining bridges of this type built in the state prior to 1951, and one of three that are also skewed. It is eligible for the National Register of Historic Places under NHRP Criterion C in the area of Engineering."[12]

Virginia has at least one polygonal top chord Warren Pony truss listed in the National Register: Bridge 1007, a 1927 structure.[13] Vermont has at least one National Register-eligible polygonal top chord Warren pony truss, the 1925 Laroque Bridge which was recorded in HAER prior to being scrapped.[14] Wyoming included one polygonal top chord Warren pony structure in its National Register nomination of truss bridges, noting the rarity of the type.[15] The Canadian province of Ontario designated a polygonal top chord Warren pony truss.[16] Indiana designates bridges as "select" and "non-select," affording a higher degree of protection to the "select" bridges. The DOT and preservation office designated six polygonal top chord Warren pony trusses as select.[17] Denis Gardner, in his recent book, *Wood, Concrete, Stone and Steel: Minnesota's Historic Bridges*, devotes several pages to the adoption of the polygonal top chord Warren pony truss by the state and counties of Minnesota, as engineers recognized that the polygonal top chord "reduces the amount of steel required to make the web."[18] The State of Oregon categorized bridges in three categories, with Category 1 given the highest level of protection. There are three Warren pony trusses in Category 1, all of the polygonal top chord variety.[19]

It is apparent from the foregoing discussion that transportation officials, as well as historic bridge advocates and students, have come to appreciate this bridge type as a distinct and important example of the evolution of bridge design in the United States. Several conclusions can be drawn from these various state studies. First, the polygonal top chord Warren pony was chiefly a product of the 1920s and 1930s. Second, it was favored by engineers because it reduced the use of material and could achieve a span of 100' or more, longer than the typical pony truss. Third, it was never built in great numbers; no state inspected for this report has more than a few examples of the bridge type. Finally, it appears that most states that have found examples of this bridge type eligible for the National Register did so on the basis of the rarity of the type.

**Polygonal Top Chord Warren Pony Trusses in California**

It appears that the use of this bridge type in California parallels that in other states. We have no information about how many such bridges were built initially, only how many exist on California highways today.

The recent update to the California Historic Bridge Inventory identified 24 such structures on California roads and highways. The pertinent facts about these 24 structures are outlined in Table 1 below.

[12] http://library.modot.mo.gov/RDT/reports/historicbridges/Horse%20Creek%20Bridge%20X0186%20Report.pdf
[13] http://www.virginiadot.org/vtrc/main/online_reports/pdf/98-r3.pdf
[14] http://lcweb2.loc.gov/master/pnp/habshaer/vt/vt0100/vt0114/data/vt0114data.pdf
[15] http://pdfhost.focus.nps.gov/docs/NRHP/Text/85000413.pdf
[16] http://www.historicbridges.org/bridges/browser/?bridgebrowser=truss/lakeshore/
[17] http://www.in.gov/indot/files/Volume_1_National_Register_Eligibility_Results.pdf. The Indiana evaluation process uses a quantitative system that is similar to that used in California. The Indiana system, however, takes into account distinctive subtypes in a way not found in the California system. In rating pony trusses, for example, it assigns extra points for distinctive elements. For Warren pony trusses, for example, seven additional points are assigned to a bridge having a polygonal top chord. That fact alone may explain why six polygonal top chord Warren pony trusses were designated "select" bridges.
[18] Denis Gardner, *Wood, Concrete, Stone, and Steel: Minnesota's Historic Bridges*, University of Minnesota Press, 2008, p. 79.
[19] http://www.oregon.gov/ODOT/HWY/BRIDGE/docs/OHBG.pdf

**Table 1. Polygonal Top Chord Warren Pony Truss Bridges in California**

| Bridge No. | County | Date | Length | Comment |
|---|---|---|---|---|
| 2C-64 | Siskiyou | 1935 | 100′ | |
| 5C-183 | Trinity | 1948 | 130′ | |
| 8-68 | Tehama | 1938 | 120′ | |
| 8C-12 | Tehama | 1949 | 2 x 80′ | |
| 8C-16 | Tehama | 1942 | 2 x 80′ | |
| 8C-32 | Tehama | 1942 | 2 X 80′ | |
| 8C-41 | Tehama | 1942 | 82′ | |
| 8C-49 | Tehama | 1940 | 2 X 80′ | |
| 8C-64 | Tehama | 1941 | 70′ | |
| 8C-73 | Tehama | 1938 | 3 x 70′ | |
| 8C-267 | Tehama | 1942 | 80′ | |
| 9-3 | Plumas | 1936 | 2 X 120′ | Listed in NR |
| 9C-8 | Plumas | 1941 | 100′ | |
| 9C-12 | Plumas | 1947 | 100′ | |
| 9C-61 | Plumas | 1941 | 55′ | |
| 10-113 | Mendocino | 1938 | 120′ | |
| 13-5 | Sierra | 1938 | 120′ | Listed in NR |
| 19C-117 | Placer | 1940 | 120′ | |
| 20C-2 | Sonoma | 1938 | 2 X 120′ | |
| 20C-17 | Sonoma | 1929 | 103′ | |
| 30C-24 | Calaveras | 1928 | 100′ | Calaveritas |
| 42C-261 | Madera | 1952 | 98′ | |
| 46C-199 | Madera | 1937 | 83′ | Moved 1951 |
| 51-97R | Santa Barbara | 1944 | 120′ | Moved 1953 |

Several observations may be made about this group of bridges. First, the majority (14 of 24) were built in 1940 or later. Second, essentially all were built in very rural counties. Tehama County alone accounts for nearly half of the number, suggesting that the county engineer had decided this bridge form was a very economical solution for remote crossings of about 70'-80'.[20] Third, the dates of construction in California appear to be consistent with the pattern in other states, with many bridges of this sort built during the 1930s. The large number of California bridges of this sort from the 1940s and early 1950s is somewhat unusual but may reflect the fact that California inventory extended into the mid-1950s, where many other states ended with the start of World War II.

What is different about California, however, is that none of these bridges has been evaluated for National Register listing on the basis of being examples of a distinctive bridge type. Two of the bridges have been listed in or determined eligible for listing in the National Register of Historic Places. In both cases, however, the determination was made based upon factors other than the bridge type. The Storrie Bridge, for example, is a 1936 structure along Highway 70 in the Feather River Canyon. It was determined eligible for listing in the National Register as part of the Feather River Highway Historic District, which includes the distinctive highway elements of this New Deal era highway, including bridges, tunnels, masonry guard rails, drinking fountains, and other such elements. The Jersey Bridge was listed in the National Register as part of an *en masse* listing of the four old bridges in Downieville. The Jersey Bridge

[20] All of the Tehama County bridges were fabricated by Judson-Pacific of Oakland. The same bridge lengths are used in most of the Tehama County bridges, suggesting the county engineer was ordering these trusses almost "off the shelf."

is listed under National Register Criterion A, with no mention of the potential significance of the bridge type.[21]

It is concluded that no bridge in California has been listed or determined eligible for listing in the National Register of Historic Places as an example of this bridge type. The two eligible or listed bridges were evaluated in separate contexts.

**Evaluation of National Register Eligibiity for the Calaveritas Creek Bridge**

The Calaveritas Creek Bridge (Bridge 30C-24) appear to be eligible for listing in the National Register of Historic Places at the local level of significance under National Register Criterion C, as an excellent example of a rare bridge type. The bridge retains an excellent degree of integrity of design, materials, workmanship, setting, feeling, and association. It does not appear to qualify under Criteria A, B, or D.

As discussed, there is a limited number of examples of this bridge type in California and elsewhere in the United States. Other states have determined bridges of this type to be National Register-eligible chiefly on the basis of the rarity of the type and the importance of the polygonal top chord design as an improvement on Warren pony trusses. As outlined earlier, a number of states have found these bridges to be National Register-eligible, highlighting both the rarity and the significance of this bridge type.
The same logic that prevails in Indiana, Nebraska, Iowa, Ohio, Oklahoma, and other states also seems to apply to the situation in California. In the 1977 Jackson and Comp study of historic truss bridge types, the polygonal top chord Warren pony truss was not mentioned, a fact that may help explain the lack of attention paid to the bridge type in the historic inventories that were conducted shortly after that study was released. In many respects, the importance and rarity of the polygonal top chord Warren was discovered by observation; those who conducted the state surveys noted the rarity of the type and worked backward to an analysis of when and why this bridge type was put into service. The various states concluded that this bridge type was adopted by state and local highway planners as an efficient solution to a specific type of crossing: a span of 100’ or more in a way that minimized the use of expensive steel.

The usefulness of the bridge type is illustrated in the history of this bridge. In August 1927, the Calaveras County Board of Supervisors directed County Surveyor W. S. Coulter, to prepare plans for a bridge in Calaveritas. In September of that year, Coulter returned with plans for two bridge types: a reinforced concrete bridge and a steel girder bridge. The county advertised for bids for both bridge types. The bids came back averaging about $9000 for either type. The county rejected all bids and directed Coulter to come back with a less expensive alternative.[22] The bridge was re-advertised a week later and all bids were again rejected.

On July 2, 1928, Coulter returned with plans for a steel truss bridge, the subject structure. The bids for this bridge were considerably less expensive; the winning bid by R.L. Stevens of Portland, Oregon, was for $6784, more than $2000 less than either the steel girder or concrete bridge.[23] The Board of Supervisors in a rural and economy-minded county chose the polygonal top chord Warren pony truss, not because it was beautiful or unusual, but because it was inexpensive and appropriate for the span of more than 100’, a substantial crossing for a pony truss bridge.

The experience in Calaveras County paralleled that of state and county highway planners elsewhere in the country, where both economy and strength were a consideration. As the Oklahoma survey noted: The most common change saw the curving of the top chord to achieve greater length and more economy

[21] http://ohp.parks.ca.gov/pages/1067/files/nrhp%20appl%20-%20jersey%20bridge.pdf. Indeed, the Warren pony bridgeis misidentified in the National Register nomination as a “polygonal Parker through truss” in the nomination form.

[22] Board of Supervisors minutes at Calaveras County Archives. 8/15/1927; 9/6/1927. Special thanks to County Archivist Shannon Van Zant for helping find this information.

[23] Board of Supervisors minutes, Book Q, page 63. The $3000 difference is more than $41,000 in 2014 equivalence.

without sacrificing strength; a polygonal chord Warren could be built to 140 feet as a rule." Or as the Texas survey notes: "Engineers of that period experimented in several ways with the historic style of the Warren truss. Curving the top chord along a polygonal profile allowed greater length and a more efficient use of materials than a standard Warren truss. The type became popular in the first two decades of the twentieth century with improvements in steel fabrication and field riveting, making it a favorite with early state and county highway engineers."

There also seems to be a pattern as to where bridges of this type were built. It has been stated earlier that the use of this bridge type was largely restricted to the 1920s and 1930s. It also appears that the bridge type was best suited, or at least was favored by bridge designers, for rural areas. The states that have inventoried and listed such bridges in the National Register are state with wide, open spaces: Texas, Iowa, Nebraska, Arkansas, Oklahoma, Ohio, and others. In California, the distribution of remaining examples of this type fits the same pattern. The Calaveritas bridge is in a very remote location. The Storrie Bridge on State Route 70 is in a wilderness setting. The Jersey Bridge is in Downieville, a very small town far removed from urban areas. The Watmaugh Road Bridge is in a rural part of Sonoma County and was surely much more remote when built in 1929. The same may be said of the nine bridges of this type in Tehama County, all of which are located on country roads.

On balance, the Calaveritas Creek Bridge appears to qualify for listing in the National Register of Historic Places under Criterion C, as an excellent example of a rare bridge type. It is arguably the best example in the state in that it is the oldest and likely the least modified. It certainly was an early use of this bridge type; only it and the Watmaugh Road Bridge in Sonoma County were built in the 1920s. Most California examples date to the 1940s. It is not necessary, however, to prove that it is the best example in the state, only that it is a significant example, and that certainly appears to be the case.

There is no reason to argue eligibility under Criteria A, B, or D; it is sufficient to qualify under any one criterion. One might argue for significance under Criterion A, (association with important events) simply because this is the only bridge that has ever served the community of Calaveritas. When the bridge was approved in July of 1928, the *Calaveras Prospect* observed that "completion of this project will fill a long sought need for the Calaveritas section."[24] The case for importance under transportation history is difficult to support, however, because the traffic on this isolated, one-lane bridge has rarely exceeded 100 cars per day. There is no evidence to support eligibility under Criterion B (association with important persons) or Criterion D (significance as an archaeological property).

[24] *Calaveras Prospect*, July 7, 1928.

## 9. Major Bibliographical References

**Bibliography** (Cite the books, articles, and other sources used in preparing this form.)

Public documents:

Calaveras County Public Works, "Calaveritas Bridge over Calaveritas Creek, Calaveras County, California," signed by W. S. Coulter, County Surveyor, June 9, 1928.

State DOT websites

Iowa DOT,"Historic Bridges of Iowa,"
http://www.iowadot.gov/historicbridges/detail.asp?id=156

Oklahoma DOT, "Spans of Time," http://www.okladot.state.ok.us/hqdiv/p-r-div/spansoftime/toc.htm

Missouri DOT,
http://library.modot.mo.gov/RDT/reports/historicbridges/Horse%20Creek%20Bridge%20X0186%20Report.pdf
Virginia DOT,
http://www.virginiadot.org/vtrc/main/online_reports/pdf/98-r3.pdf
Texas
http://lcweb2.loc.gov/master/pnp/habshaer/vt/vt0100/vt0114/data/vt0114data.pdf
Arkansas. http://pdfhost.focus.nps.gov/docs/NRHP/Text/85000413.pdf
http://www.historicbridges.org/bridges/browser/?bridgebrowser=truss/lakeshore/
Indiana
http://www.in.gov/indot/files/Volume_1_National_Register_Eligibility_Results.pdf

Articles

Mikesell, Stephen D., "Historic Preservation that Counts: Quantitative Methods for Evaluating Historic Resources," *The Public Historian,* Fall, 1986, pp. 61-74.

Jackson, Donald and T. Alan Comp, *Bridge Truss Types: A Guide to Dating and Documenting.* Technical Leaflet 95 by the American Association of State and Local History, May 1977.

Books

Gardner, Denis, *Wood, Concrete, Stone, and Steel: Minnesota's Historic Bridges*, University of Minnesota Press, 2008, p. 79.

Mikesell, Stephen D., *Historic Highway Bridges of California*, Caltrans 1990

Mikesell, Stephen D., National Cooperative Highway Research Program report NCHRP 25-25, Task 88, "Transferring Ownership of Historic Bridges: Approaches and Challenges," August 2014.

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**Previous documentation on file (NPS):**

____ preliminary determination of individual listing (36 CFR 67) has been requested
____ previously listed in the National Register
____previously determined eligible by the National Register
____designated a National Historic Landmark
____ recorded by Historic American Buildings Survey #_____
____recorded by Historic American Engineering Record # _____
____ recorded by Historic American Landscape Survey # _____

**Primary location of additional data:**

____ State Historic Preservation Office
____ Other State agency
____ Federal agency
____ Local government
____ University
____ Other
Name of repository: _____

**Historic Resources Survey Number (if assigned): _____**

---

**10. Geographical Data**

**Acreage of Property** Less than 1

Use either the UTM system or latitude/longitude coordinates

**Latitude/Longitude Coordinates (decimal degrees)**
Datum if other than WGS84:_____
(enter coordinates to 6 decimal places)

1. Latitude: 39° 09’ 22.04” Longitude: 120° 36’34.51”
2. Latitude: Longitude:
3. Latitude: Longitude:
4. Latitude: Longitude:

**Or**
**UTM References**
Datum (indicated on USGS map):

☐ NAD 1927 or ☐ NAD 1983

| | | |
|---|---|---|
| 1. Zone: | Easting: | Northing: |
| 2. Zone: | Easting: | Northing: |
| 3. Zone: | Easting: | Northing: |
| 4. Zone: | Easting : | Northing: |

**Verbal Boundary Description** (Describe the boundaries of the property.)

The boundaries of this bridge extend from abutment to abutment longitudinally and from the outside of one truss to the outside of the other truss horizontally.

**Boundary Justification** (Explain why the boundaries were selected.)

The intent of this nomination is to include the bridge and no other related feature. By common practice, the full extent of a bridge is abutment (longitudinally) and outside edge to outside edge (horizontally)/

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**11. Form Prepared By**

name/title: _Stephen D. Mikesell_____
organization: _Mikesell Historical Consulting_____
street & number: _1532 Eligio Lane _____
city or town: __Davis_____ state: __CA_____ zip code: __95618___
e-mail_ _stephenmikesell@outlook.com_____
telephone: _(916) 607-3723_____
date: __4/15/15_____

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**Additional Documentation**

Submit the following items with the completed form:

- **Maps:** A **USGS map** or equivalent (7.5 or 15 minute series) indicating the property's location. (Attached is a KMZ from Google Earth showing the location of this bridge.)

- **Sketch map** for historic districts and properties having large acreage or numerous resources. Key all photographs to this map.

- **Additional items:** (Check with the SHPO, TPO, or FPO for any additional items.)

**Photographs**

Submit clear and descriptive photographs. The size of each image must be 1600x1200 pixels (minimum), 3000x2000 preferred, at 300 ppi (pixels per inch) or larger. Key all photographs to the sketch map. Each photograph must be numbered and that number must correspond to the photograph number on the photo log. For simplicity, the name of the photographer, photo date, etc. may be listed once on the photograph log and doesn't need to be labeled on every photograph.

**Photo Log**

Name of Property: Calaveritas Creek Bridge
City or Vicinity: Calaveritas, California
County: Calaveras State: CA
Photographer: Stephen D. Mikesell
Date Photographed: 2/27/2015
Description of Photograph(s) and number, include description of view indicating direction of camera: General view of bridge in its setting, camera looking north
1 of _4_.

Name of Property: Calaveritas Creek Bridge
City or Vicinity: Calaveritas, California
County: Calaveras State: CA
Photographer: Stephen D. Mikesell
Date Photographed: 2/27/2015
Description of Photograph(s) and number, include description of view indicating direction of camera: Detail of truss, camera looking northwest
2 of _4_.

Name of Property: Calaveritas Creek Bridge
City or Vicinity: Calaveritas, California
County: Calaveras State: CA
Photographer: Stephen D. Mikesell
Date Photographed: 2/27/2015
Description of Photograph(s) and number, include description of view indicating direction of camera: Detail of truss from creekside, camera looking northwest
3 of _4_.

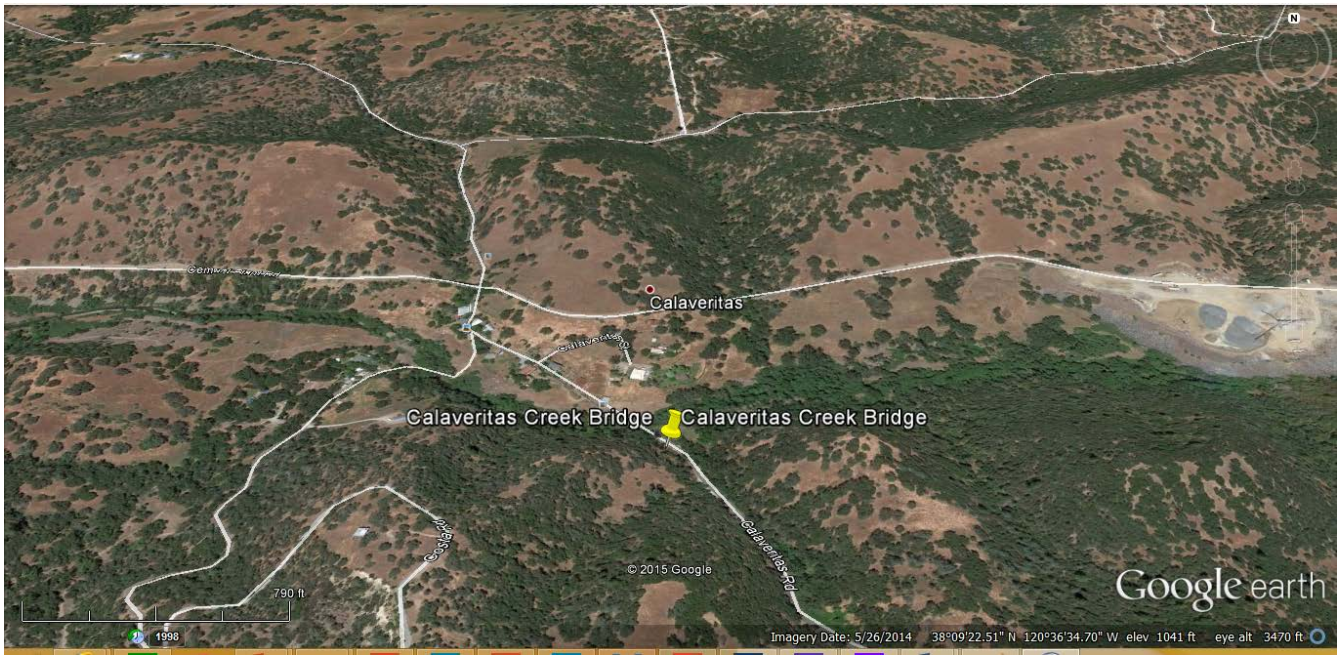
Name of Property: Calaveritas Creek Bridge
City or Vicinity: Calaveritas, California
County: Calaveras State: CA
Photographer: Stephen D. Mikesell
Date Photographed: 2/27/2015
Description of Photograph(s) and number, include description of view indicating direction of camera: Detail of transverse beam connector, camera looking west
4 of _4_.

**United States Department of the Interior**
National Park Service

## National Register of Historic Places Continuation Sheet

| |
|---|
| Ca;averitas Creek Bridge |
| Name of Property |
| 009-CA |
| County and State |
| |
| Name of multiple listing (if applicable) |

Section number 11 Page 24




**Location Map**

Figure 1. Comparison of California and Ohio Evaluation Systems

| OHIO | | CALIFORNIA | | | |
|---|---|---|---|---|---|
| *Date* | | | | | |
| Pre-1885 | 15 | Pre-1900 | 20 | | |
| 1885–1899 | 10 | 1900–1909 | 16 | | |
| 1900–1912 | 8 | 1910–1919 | 12 | | |
| 1913–1929 | 6 | 1920–1929 | 8 | | |
| 1930–1940 | 4 | 1930–1937 | 4 | | |
| post-1940 | 0 | 1937–1945 | 0 | | |
| | | post–1945 | −20 | | |
| *Builder* | | | | | |
| Known Ohio Builder | 8 | Major example of significant builder or designer | 12 | | |
| Known out-of-state | 4 | Minor example of . . . | 6 | | |
| Unknown | 0 | Unknown | 0 | | |
| *Number of Spans* | | | | | |
| Maximum | 5 | Maximum | 8 | | |
| *Length of Span* | | | | | |
| Maximum | 5 | Maximum | 8 | | |
| *Special Features* | | | | | |
| Maximum (Special features differ slightly) | 10 | Maximum | 12 | | |
| *Aesthetics* | | | | | |
| Maximum | 8 | Maximum | 10 | | |
| *History* | | | | | |
| Maximum | 8 | Maximum | 10 | | |
| *Surviving Numbers* | | | | | |
| Maximum | 20 | Maximum | 20 | | |
| *Integrity* | | | | | |
| | | | Location | Design | Other |
| Excellent | 2 | Excellent | 0 | 0 | 0 |
| Good | 1 | Good | −3 | −3 | −1 |
| Fair | NA | Fair | −6 | −6 | −2 |
| Poor | 0 | Poor | −9 | −9 | NA |
| (Maximum) | 2 | (Maximum) | | −20 | |
| *Other Considerations* (Bypass Potential, Condition, and Maintenance) | | | | | |
| Maximum | 19 | | | NA | |
| TOTAL | 100 | | | 100 | |



**Figure 1. Comparison of California and Ohio Evaluation Methods**

**United States Department of the Interior**
National Park Service

| Calaveritas Creek Bridge |
|---|
| Name of Property |
| 009-CA |
| County and State |
| |
| Name of multiple listing (if applicable) |

## National Register of Historic Places Continuation Sheet

Section number AD Page 23

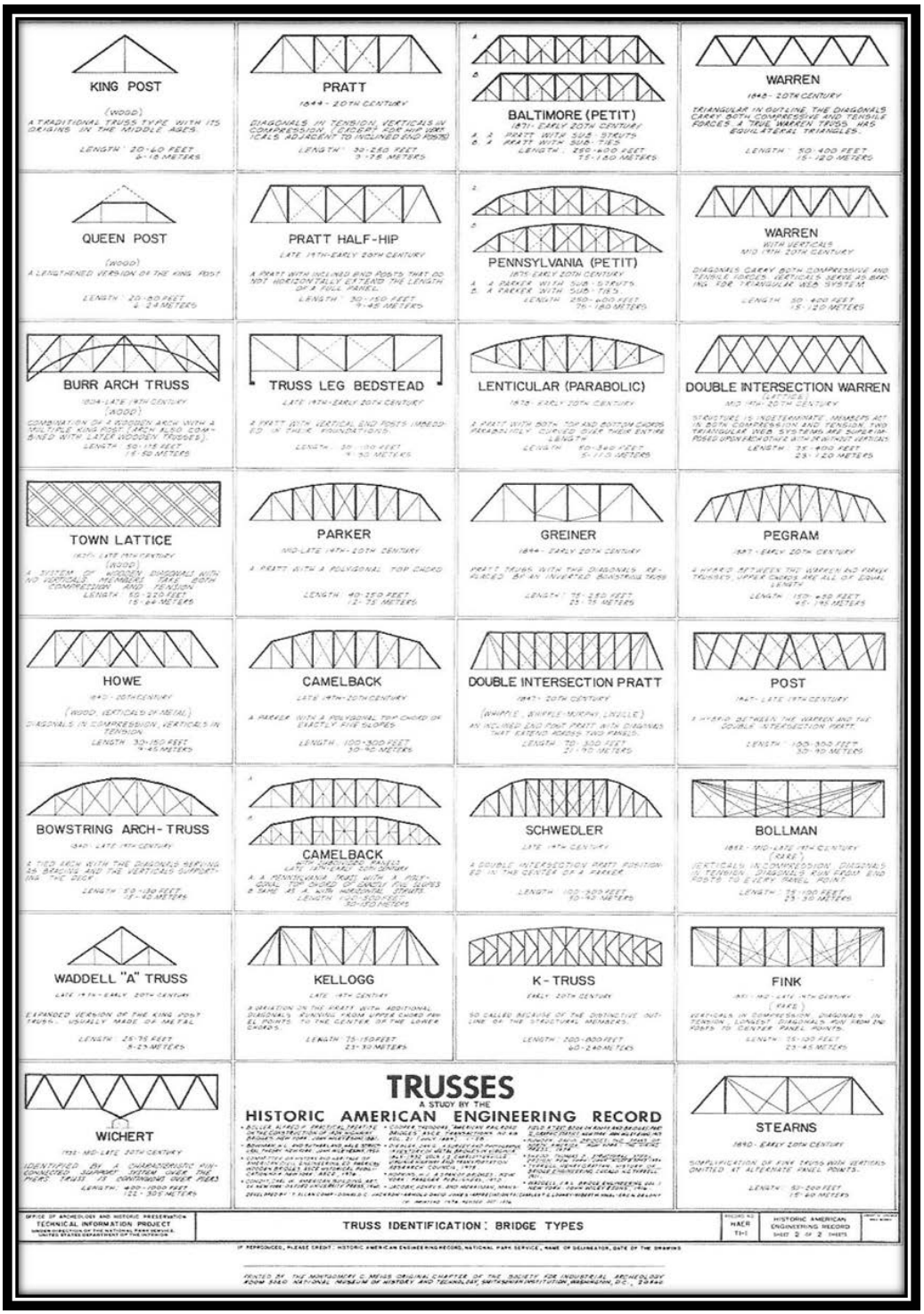



**Figure 2. Truss Types by T. Alan Comp and Donald Jackson, 1977**